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"Regional connectivity for shared prosperity"

Regional connectivity for shared prosperity

Note by the secretariat**

Summary

The recent economic success of the Asia-Pacific region has been driven largely by international trade, foreign direct investment and the emergence of global and regional production networks and value chains. These drivers, in turn, were facilitated by trade liberalization, expansion of transport links and the diffusion of information and communications technologies. However, the region's growing prosperity has not been shared equally, and there are clear signs of rising income inequality both within and between countries. In particular, the region's least developed countries, landlocked developing countries and small island developing States have yet to fully benefit from the new opportunities arising from enhanced connectivity.

It is therefore timely that the Commission selected the theme of "Regional connectivity for shared prosperity" for its seventieth session. The present document contains a discussion on the role of connectivity in driving recent economic growth in the region and identification of new drivers of growth which will shape social and economic development into the future. A set of regional strategies is then presented, the aim of which is to strengthen connectivity in four critical areas: trade and transport; information and communications technology; energy; and people-to-people connectivity.

As the region's networks become increasingly integrated and interdependent, the future of regional connectivity will depend on how closely countries in the Asia-Pacific region work together. This will require stronger institutional coordination between Governments, both across sectors and across borders. Greater cooperation is also needed to collect and analyse relevant data on connectivity, as well as to identify new sources of finance for developing regional infrastructure networks. To enhance the effectiveness of these efforts, Governments should enlist the support of the private sector, academia and civil society.

The Commission may wish to deliberate on the issues raised in the document, particularly on how the region can take advantage of extended and strengthened connectivity for the shared prosperity of its member States. The Commission may also wish to guide the secretariat on the next steps for implementing the regional strategies presented in the document.

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I. Introduction

1. Over the past 50 years, the Asia-Pacific region has experienced unprecedented economic growth. That growth, along with better standards of education and health, has contributed to the region's remarkable achievements in poverty reduction: between 1990 and 2011 the population living on income below $1.25 per day dropped from about 1.6 billion to fewer than 750 million.[1]

2. However, this still means that there are unacceptable levels of poverty, with almost two thirds of the world's poor, as measured by the $1.25 poverty line, currently living in the region. Furthermore, the region's growing prosperity has not been shared equally, and there are clear signs of rising income inequality, both within and between countries. Inequality is also becoming more pronounced in other ways, in terms of access to transport, information and communications technology (ICT) and energy resources, for example.

3. In recent years, the concept of "connectivity" has been broadened, and it has entered into mainstream development discourse. ESCAP has promoted connectivity as a necessary and integral aspect of regional integration, and identified a number of key regional networks at the core of regional connectivity, namely trade and transport, ICT and energy infrastructure and people-to-people networks.[2]

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[1] Figures are in 2005 purchasing power parity (PPP). *Statistical Yearbook for Asia and the Pacific 2013* (United Nations publication, Sales No. E.13.II.F.1), p.109.

[2] *Growing Together: Economic Integration for an Inclusive and Sustainable Asia-Pacific Century* (ST/ESCAP/2629) (Bangkok, ESCAP, 2012).

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4. Regional connectivity will offer best results if it enhances the level and effectiveness of regional networks to facilitate flows of goods, services, people and knowledge. As new drivers of growth emerge, the types of connectivity needed will also evolve. It is therefore timely that the Commission selected the theme of "Regional connectivity for shared prosperity" for its seventieth session in 2014. The document presents a summary of this year's theme study, which constitutes Part II of the *Economic and Social Survey of Asia and the Pacific 2014*.

5. The Commission may wish to deliberate on the issues raised in the document, particularly on how the region could take advantage of extended and strengthened connectivity for the shared prosperity of member States. The Commission may also wish to guide the secretariat on the next steps for implementing the regional strategies presented in the document.

II. Regional connectivity supporting economic growth and development

A. Main drivers behind the region's economic success

6. The region's recent economic growth has been driven largely by international trade, foreign direct investment and the emergence of global and regional production networks, as well as global value chains. Following the 1997/98 Asian financial crisis, countries in the region began paying greater attention to the benefits of regional integration and began to actively negotiate trade or broader economic partnership agreements.

7. Progress in trade liberalization led to the growth of foreign direct investment flows, which, together with technological changes in manufacturing processes and the diffusion of information and communication technologies, created conducive conditions for regional production networks.[3] Emerging economies in particular have benefited from regional and global value chains: in China, for example, the income derived from trade flows within global value chains, measured as "export of domestic value added", increased six-fold between 1995 and 2009, and the number of jobs sustained by the export of that value added increased from 89 million in 1995 to 146 million in 2008.[4]

8. The changing spatial distribution of regional production networks partly explains why, since 2009, intraregional trade has been growing faster than trade with the region's more traditional trading partners in Europe and North America and also why, in 2012, East and North-East Asia and South-East Asia accounted for about 75 per cent of total intraregional trade. It also explains why intraregional flows of foreign direct investment (FDI) have increased significantly in the last 10 years, mostly originating in East Asian countries but also increasingly from within the Association of Southeast Asian Nations (ASEAN). Not all such groups of countries have been as successful: in 2012, for example, the South and South-West Asian subregion

[3] See, for example, N. Kumar, Regional economic integration, foreign direct investment and efficiency-seeking industrial restructuring in Asia: the case of India, RIS discussion papers, RIS-DP, No. 123 (New Delhi, RIS, 2007). Available from www.eaber.org/sites/default/files/documents/RIS_Kumar_2007_02.pdf.

[4] Implications of global value chains for trade, investment, development and jobs, prepared for the G-20 Leaders Summit, Saint Petersburg, Russian Federation, September 2013 (OECD, WTO and UNCTAD, 2013). Available from www.oecd.org/trade/G20-Global-Value-Chains-2013.pdf.

accounted for only 13.3 per cent of exports and 8.7 per cent of imports of intraregional trade, while the North and Central Asian subregion had even smaller shares at 7.2 per cent and 8.9 per cent of exports and imports respectively.[5]

9. Differences in subregional trade performance may be explained by differences in international trade costs. According to the ESCAP-World Bank International Trade Costs Database, trade costs between South Asia and South-East Asia are higher than between either subregion and the United States, while trade costs between the Pacific island developing economies and other subregions are significantly higher than those between all other subregions.[6] Furthermore, trade costs within North and Central Asia, the Pacific island developing economies and South Asia are more than double the trade costs between China, Japan and the Republic of Korea.

10. A major factor explaining differences in trade costs is the extent of trade and transport connectivity. For example, China's participation in the global economy over the past two decades depended on reaching international markets. To support this goal, the Government promoted industrial development in specific regions of the country and invested in transport infrastructure to enable the cost-effective movement of goods to and from major maritime ports. Conversely, landlocked developing countries are at a competitive disadvantage due to the extra costs and time spent in transit and at border crossings. Meanwhile, the poor quality of land transport infrastructure acts as a major barrier to cross-border trade in the region.

11. Another factor explaining differences in trade costs is the level of containerized transport. The rise of containerization facilitated intermodal transfers, enabling different transport modes to be integrated into seamless systems. Containerization also triggered innovations in the shipping industry, leading to larger carriers and expanding the volume of freight which could be carried per trip. Given that the competitiveness of maritime transport is based on economies of scale, countries which developed container ports and shipping facilities, such as those in East Asia and South-East Asia, were able to take advantage of cheaper and more efficient maritime transport services. The issue of scale also explains why shipping operators face difficulties in offering regular services to countries with smaller economies, such as small island developing States in the Pacific.

12. Finally, the experience of East Asia and South-East Asia also shows that the simplification and harmonization of trade and transport documents helped businesses in those subregions to engage in international trade. In ESCAP research, it was found that 60-90 per cent of trade costs now had been derived from policy-related non-tariff costs, including costs at the borders, the regulatory environment, maritime connectivity and services, trade procedures and currency fluctuations.[7]

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[5] *Asia-Pacific Trade and Investment Report 2013. Turning the Tide: Towards Inclusive Trade and Investment* (United Nations publication, Sales No. E.14.II.F.2).

[6] This database provides an aggregate measure of all costs involved in trading goods internationally with another partner (i.e. bilaterally) relative to those involved in trading goods domestically. See http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=escap-world-bank-international-trade-costs.

[7] See Jean-François Arvis, and others, "Trade costs in the developing world:1995-2010", Policy Research Working Paper, No. 6309 (Washington D.C.,World Bank, 2013).

B. New drivers of growth shaping development patterns into the future

1. Trade and transport connectivity remains a priority

13. The recent economic slowdown exposed the region's vulnerability to fluctuations in the global economy, particularly the spending and investment policies of European countries and the United States of America. Thus, attention has shifted to domestic and regional markets as sources of economic growth. The development of trade and investment links between the region's more dynamic middle-income countries and their smaller and poorer neighbours will depend on how well they are connected to each other.

14. Despite significant investment in transport infrastructure, regional land transport infrastructure networks, such as the Asian Highway and Trans-Asian Railway, remain underutilized for international trade. The poor quality of infrastructure, absence of intermodal transfer facilities, cumbersome border-crossing procedures and institutional barriers to cross-border services, all reduce the efficiency of these networks.

15. At the same time, thanks to technological advances, trade and investment are now determined less by geography and more by such factors as competitiveness, timeliness and security. This situation has led to growing interest in improving the "soft" infrastructure underpinning trade and transport, as well as other means of reducing logistics costs. Both ASEAN and Asia-Pacific Economic Cooperation (APEC), for example, focus on trade and transport facilitation as part of their "institutional connectivity" agendas, while the Ninth World Trade Organization Ministerial Conference, held in Bali, Indonesia, from 3 to 6 December 2013, attempted to address the issue through its Agreement on Trade Facilitation. To enhance trade and transport connectivity, the development of both "soft" and "hard" infrastructure is a priority for the region.

2. ICT as an enabler and driver of growth

16. The Internet and mobile communications continue to radically transform ways in which businesses operate and people interact, as they drive productivity in almost every sector of the economy. Businesses and markets are rewarded by the uptake of new technology and the speed at which information can be accessed. Instant communications are increasingly important in determining the efficiency of trade, including financial services, information and data management services and transport and logistics services. Increased ICT connectivity is also opening doors to knowledge generation and sharing, particularly for people living in remote or rural areas.

17. However, Asia and the Pacific remains the most digitally divided region in the world. It is estimated that, on average, roughly 30 per cent of the people in the region use the Internet, while only 7.4 per cent of the people are believed to have access to high-speed fixed broadband.[8] The high cost of international bandwidth in Asia and the Pacific has made Internet access unaffordable for much of the region.

18. Thus, the "digital divide" is translating into new types of inequality, which cut across geography, income, education, gender and age groups. For example, even among the new "digital natives", or those young adults who have interacted with digital technologies throughout their lives, there are

[8] International Telecommunications Union, *World Telecommunication/ICT Indicators Database 2012* (Geneva, ITU, 2012).

enormous disparities between countries.[9] The key challenge for countries in the region is to develop physical infrastructure to strengthen ICT connectivity, as well as to make the Internet accessible for all.

3. Expanding the region's trade in services

19. The Asian and Pacific region has become an important player in the export of commercial services, broadly categorized as transportation, travel and other commercial services. Today, China; Hong Kong, China; India; the Republic of Korea; and Singapore are major exporters of commercial services, while some non-traditional services exporters, such as Azerbaijan; Georgia; Kyrgyzstan; Macao, China; and Mongolia, have increased their share in total Asian services exports.[10] Tourism in particular has been expanding rapidly, with the region capturing nearly one quarter of total global tourist arrivals in 2013.

20. In the future, these service sectors will offer alternative sources of growth for countries that are distant from major regional production and consumption centres, including landlocked developing countries and small island developing States. However, as services increasingly rely on fast and reliable Internet and telecommunications systems, their growth will depend on the availability of broadband connectivity.

4. Energy connectivity and security

21. The region's recent economic growth and rising affluence has resulted in a growing demand for energy resources, and with it, greater greenhouse gas emissions. In 2011, the region accounted for about 40 per cent of global oil and gas consumption, and 70 per cent of global coal consumption.[11] While several countries in the region are net exporters of energy, only a few satisfy their energy needs from their own resources.

22. To address this imbalance, many countries in the region are involved in cross-border initiatives to secure energy from other countries. These can be divided into three main groups: infrastructural projects of inter-subregional or subregional significance; infrastructural projects of bilateral significance; and maritime energy trade projects. To bridge the growing energy divide and ensure energy security for the region as a whole, what is needed now is greater energy connectivity at the regional level, along with measures to improve energy efficiency and adopt greener options.

5. Responding to population dynamics

23. The Asia-Pacific region is undergoing population change of a magnitude and pace never before witnessed in human history: between 1950 and 2013 the region's population nearly tripled, from 1.5 billion people to

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[9] For example, in the Republic of Korea, 99.6 per cent of young people have been active on the Internet for at least five years, while in Timor-Leste this figure is less than 1 per cent. See International Telecommunications Union, *Measuring the Information Society 2013* (Geneva, ITU, 2013), p. 143. Available from www.itu.int/en/ITU-D/Statistics/Pages/publications/mis2013.aspx.

[10] *Asia-Pacific Trade and Investment Report 2013. Turning the Tide: Towards Inclusive Trade and Investment* (United Nations publication, Sales No. E.14.II.F.2.).

[11] International Energy Agency, "IEA World Energy Statistics and Balances". Available from www.oecd-ilibrary.org/energy/data/iea-world-energy-statistics-and-balances_enestats-data-en.

4.3 billion.[12] Nearly all countries in the region are also experiencing population ageing, albeit at different paces. Meanwhile, improved access to transport and information has led to greater cross-border mobility, and today the Asia and Pacific region is host to 59 million migrants — or one quarter of the world's total stock.[13] As the region's economies develop and integrate, it is likely that the demand for migrants will grow and become more diversified.

24. The implications of these trends are significant for the future development of the region, and point to the urgent need to prepare effective policy responses. For example, countries in the earlier stages of the demographic transition need to expand education and employment opportunities for their young people, while countries that are rapidly ageing need to consider ways to tap into the region's labour supply. Meanwhile, an important global challenge is how to manage international labour migration in ways that protect migrants while contributing to sustainable development in both the countries of origin and host countries.[14]

6. Transitioning to knowledge-based economies

25. Knowledge is now recognized as a major source of growth, underpinning the emergence of knowledge-intensive industries. To diversify their economies and move up value chains, countries need people with skills and knowledge, as well as an innovative spirit, to develop new products and processes.

26. The Asia-Pacific region is already home to many leading research institutions and universities, but countries can also take advantage of the new opportunities for tertiary education, knowledge generation and knowledge-sharing which are emerging from improved transport and ICT connectivity. These forms of connectivity are facilitating links between universities, researchers and industry. Some countries, for example, have successfully replicated the "Silicon Valley" model of firms with close links to universities, enabling them to benefit from knowledge spillovers generated by universities. By strengthening regional knowledge-sharing networks, more countries could participate in the region's "knowledge clusters".

III. Regional strategies for enhancing regional connectivity

27. The issue for the Asian and Pacific region is not whether connectivity will increase across countries, but what forms those connections will take. While countries in the region have made significant progress in improving their domestic connectivity, their futures will depend on how closely they can work together to strengthen regional networks. It is also becoming evident that regional connectivity is multifaceted, with the connectivity of one sector influenced by the connectivity of others. This gives rise to new challenges in

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[12] Figures for 1950 come from K.S. Seetharam, "Twenty-five years of transition in Asia's population and development: a review of progress and potential", *Asia-Pacific Population Journal*, vol. 27, No. 1 (June 2012), pp. 13-32 (United Nations publication, Sales No. E.12.II.F.99). Figures for 2013 come from ESCAP, 2013 ESCAP Population Data Sheet.

[13] United Nations, Department of Economic and Social Affairs, *Trends in International Migrant Stock: The 2013 Revision*. Available from http://esa.un.org/unmigration/TIMSA2013/migrantstocks2013.htm?mhome.

[14] P.L. Martin, "Labour migration and development indicators in the Post-2015 Global Development Framework", working paper prepared for the IOM World Migration Report (Geneva, International Organization for Migration, 2012).

terms of institutional coordination, not only across borders but also across sectors.

28. As they are still in the development stage, countries in the Asian and Pacific region have the chance to develop regional networks in an integrated and coordinated manner. This can reduce costs and spread benefits to a wider group of countries, particularly to the least developed countries, landlocked developing countries and small island developing States. In this regard, four types of connectivity are identified in the study as being critical for the region: trade and transport; ICT; energy; and people-to-people connectivity.

A. Trade and transport connectivity

29. Under the auspices of ESCAP, member States have formulated a number of regional strategies and initiatives on trade and transport connectivity, including the Regional Action Programme for Transport Development in Asia and the Pacific, Phase II (2012-2016)[15] and the United Nations Network of Experts for Paperless Trade in Asia and the Pacific (UNNExT),[16] to name just a few. Many subregional organizations and multilateral development banks also actively promote trade and transport connectivity. Within the framework of these initiatives, countries should prioritize the following areas to strengthen trade and transport connectivity in the region.

1. Upgrading and integration of regional transport networks

30. ESCAP has long been a proponent of regional approaches to infrastructure development. Its efforts led to intergovernmental agreements on the Asian Highway and Trans-Asian Railway networks, which today comprise 143,000 km of roads and highways and 117,500 km of rail routes of international importance respectively. However, there are still significant infrastructure gaps, particularly between least developed countries and landlocked developing countries and the region's maritime transport network.

31. There is also tremendous potential for increasing the modal share of railways. Currently, a major obstacle to attracting freight to the railways is the lack of efficient and properly equipped intermodal facilities to transfer goods between the road and railway networks in the region. Countries must therefore invest in dry ports or inland container depots, where freight can be switched from one form of transport to another without delay or damage. In this regard, the adoption in 2013 of the Intergovernmental Agreement on Dry Ports[17] offers a useful framework for countries to develop the dry ports in the region.

2. Enhancing cooperation at border crossings

32. Another major impediment to trade and transport connectivity is the presence of multiple "choke points", particularly at borders. Border agencies are required to maintain a fine balance between facilitating trade and

[15] See Commission resolution 68/4, annex, appendix I.

[16] UNNExT is a regional community of experts that conduct research and provide support on paperless trade and the single window. For more information, see http://unnext.unescap.org.

[17] See Commission resolution 69/7. The Intergovernmental Agreement on Dry Ports was signed by 14 countries during the second session of the Forum of Asian Ministers of Transport, held in Bangkok in November 2013. Under this agreement, countries nominated important nodal points between the Asian Highway and Trans-Asian Railway networks for development into dry ports.

transport and asserting regulatory controls. These controls are important but add to the cost, time and risk involved in moving freight by land. Many countries are already taking steps to enhance cooperation between their border agencies, mostly on a bilateral basis. The next step is to integrate checkpost facilities at all international border crossings, starting with those along the Asian Highway and Trans-Asian Railway networks.

3. Harnessing ICT connectivity for trade and transport facilitation

33. The use of automated equipment and data collection systems is transforming the way border agencies operate. Automated data collection systems reduce overlaps when the same information is collected by more than one agency – and on both sides of the border. ESCAP has developed several models to show how automated equipment and new technologies, such as radio frequency identification (RFID) and the Global Positioning System (GPS), can help manage cross-border movements of trade and transport more efficiently.

34. Furthermore, the introduction of electronic platforms for trade and transport facilitation affords new opportunities for countries to simplify and standardize trade documents and processes. Today, nearly all countries in the region have some form of automated customs systems in place at key border checkpoints, and more than half are developing "single windows".[18] The ultimate target of such initiatives, including the regional cross-border paperless trade facilitation initiatives of ESCAP, is to integrate national integrated paperless supply chain platforms along an entire chain of import-export operations.[19] Such a system sets the stage for a transition to electronic logistics, or "e-logistics".[20]

4. Developing competitive regional transport and logistics services

35. Experiences from the maritime and aviation sectors have shown that the cost and quality of transport services is affected by the level of competition in the transport sector. Currently, almost all countries in the ESCAP region restrict entry of foreign transport service providers in their domestic markets, but several countries have established bilateral or trilateral arrangements to allow cross-border movements by road without the need for transport permits. Meanwhile, the draft agreement between Shanghai Cooperation Organization member States on facilitation of international road transport and its annexes are also being finalized.

36. In the case of railways, cross-border movements are hampered by institutional differences in operating rules, tariff structures and licensing requirements for train drivers and crew. However, there are also successful examples of how countries can cooperate to provide regular and competitive international railway services. ESCAP is now developing a draft regional strategic framework for the facilitation of rail transport in the region to identify and address current obstacles to cross-border rail freight movements.

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[18] Single windows enable traders to submit all required information to government agencies at one time and place, as well as to track the progress of applications and registration with government agencies.

[19] See Commission resolution 68/3 on enabling paperless trade and the cross-border recognition of electronic data and documents for inclusive and sustainable intraregional trade facilitation.

[20] "E-logistics" comprises a set of communications, computing and collaborative technologies that enable the electronic exchange of data, knowledge and information between supply chain partners.

B. ICT connectivity

37. While ICT infrastructure has been expanding rapidly in Asia and the Pacific, bandwidth on average is still far more limited than in Europe or North America. The wide disparities in access and costs, both within and between countries, arise in part from the current configuration of fibre-optic networks. Insufficient land-based routes for international Internet traffic in the region means that the majority of traffic is exchanged through submarine cables, with routings based on hub-and-spoke configurations and moving through multiple Internet exchange points.

38. To address these shortcomings, ESCAP is promoting the concept of an Asia-Pacific information superhighway, which would comprise a cohesive "meshed" regional terrestrial fibre-optic network. Such a network would complement existing submarine cable networks and would enhance in particular the ICT connectivity of landlocked countries that are located thousands of kilometres from undersea cables. The competition introduced by such a network could lower the cost of international bandwidth and also provide incentives to Governments to liberalize international gateways.

1. Towards an Asia-Pacific information superhighway

39. The development of an Asia-Pacific information superhighway is a complex process requiring very close collaboration between member States, as well as with private sector partners and international organizations. In this regard, ESCAP has identified the following principles which should underpin any regional strategy:

(a) *The network should be fully integrated and coherent.* It should provide cross-border connectivity across the continent, with particular focus on reaching rural and less commercially profitable areas. A mesh configuration would allow for "in-network healing" in the event of physical cable outages or political instability that might affect network connectivity in individual countries;

(b) *The network should be of uniform quality.* Currently, some terrestrial networks are patchworks of domestic telecommunications networks which provide variable quality and offer vastly different terms and service guarantees. A single uniform network with standard terms and quality of service would alleviate these problems;

(c) *The network should leverage existing infrastructure.* In order to remain cost effective, any pan-Asian terrestrial network would need to be based on streamlined procurement of rights-of-way, as well as on uniform construction techniques and parameters. This could be realized through a partnership with existing regional infrastructure networks, such as the Asian Highway and Trans-Asian Railway networks, or power transmission networks;

(d) *The network must be cost-effective.* If constructed on a proper scale in terms of geographical coverage and transmission capacity, a pan-Asian terrestrial network could effectively compete with submarine infrastructure at both the regional and intercontinental levels;

(e) *The network should be an open-access one and feature non-discriminatory pricing.* All purchasers of capacity must be able to access the network on equal, non-discriminatory terms. The concept of non-discrimination should also be carried over on a geographical basis so that countries can receive bandwidth at equal prices.

2. Harnessing cross-sectoral synergies for infrastructure development

40. Given the low level of broadband penetration in continental Asia, there is a tremendous opportunity for Governments to look at synergistic approaches to developing an Asia-Pacific information superhighway. Examples from the national ICT infrastructure development strategies of India, the Republic of Korea and the United States suggest that the "co-habitation" of fibre-optic cables with road and railway networks could save capital costs and facilitate access for maintenance and repair. Rail and power networks already have fibre-optic networks for railway signalling and their supervisory control and data acquisition — the so-called SCADA systems — so allowing additional cables would not add significant costs. Furthermore, the surplus capacity could be sold for additional income. There are also opportunities to integrate power transmission and telecommunications, as demonstrated by the vast fibre-optic network laid by the Power Grid Corporation of India Limited.

41. Similar synergies can be achieved when developing cross-country connections. In particular, under the intergovernmental agreements on the Asian Highway, the Trans-Asian Railway and dry ports, countries have already agreed on a set of international border crossings along those networks. By linking the development of the proposed Asia-Pacific information superhighway with these agreements, countries may be able to avoid lengthy "right-of-way" negotiations, which sometimes delay cross-border infrastructure projects.

3. Strengthening ICT connectivity of Pacific island countries

42. The Pacific island countries offer many examples of how ICT connectivity is transforming economies and societies for the better. In particular, mobile phone connectivity is enhancing access to financing and banking services, while the Internet is expanding educational opportunities through distance-learning. However, broadband penetration in the Pacific island countries remains limited, with only five economies (Cook Islands, Fiji, Palau, Tonga and Tuvalu) having more than 1 fixed broadband subscription per 100 inhabitants. Broadband is also still prohibitively expensive: for example in 2012, fixed broadband costs were approximately $19.50 in Fiji and $185.60 in Papua New Guinea, corresponding to 6.4 per cent and 150.5 per cent of gross national income per capita respectively.[21]

43. A number of technological solutions can overcome the high costs and lack of data connectivity and Internet bandwidth. For example, a next generation medium Earth orbit satellite constellation, O3b Networks, was launched in 2013, while the Pacific Regional Connectivity Program is aimed at connecting Samoa, Solomon Islands, Tonga and Vanuatu by submarine fibre-optic cables. However, these solutions will still rely on international bandwidth from land- and sea-based optical fibre. The proposed Asia-Pacific information superhighway could therefore help expand competition, even for countries in the Pacific, thereby reinforcing the case for a regional approach to ICT connectivity.

[21] International Telecommunications Union, *Measuring the Information Society 2013* (Geneva, ITU, 2013).

C. Energy connectivity

44. The Asia-Pacific region remains heavily dependent on fossil fuels, and the region as a whole is a net importer of primary energy. To address its growing demand for energy, the region has a number of existing and planned pipeline projects. Meanwhile several multi-country initiatives are focused on electricity and power grid integration, including the ASEAN Power Grid, the CASA-1000 Project and the SAARC Market for Electricity. However, countries in the region have yet to realize the economies of scale that would come from linking these subregional initiatives through a regional energy cooperation framework.

1. Towards an Asian energy highway

45. The region's energy security could be enhanced by promoting greater cooperation between the region's energy importers and energy exporters by harmonizing policies and by exchanging knowledge, particularly in the areas of energy efficiency and renewable energy technologies. A regional energy arrangement could also explore low-carbon paths, as well as develop regional markets for crude oil, petroleum products and gas, while giving higher priority to pipeline security and safety.

46. To move in this direction, in 2012, ESCAP member States accepted the concept of an integrated regional power grid, which could be termed the "Asian Energy Highway".[22] The so-called energy highway would involve an integrated electricity grid based on a range of primary energy sources, whether fossil fuels, nuclear or renewables. The following encouraging developments are making such an integrated grid more feasible:

(a) Several mutually beneficial power trading arrangements are progressing at various levels of subregional integration;

(b) High-voltage transmission systems, in particular high-voltage direct current systems, are improving the economic range for interconnecting power grids and unlocking access to remote energy resources;

(c) "Smart grid" communication and management technologies are providing opportunities for improved load balancing and are enabling greater optimization of energy flows. These are also more capable of absorbing intermittent renewable energy resources, such as solar and wind.

47. An Asian energy highway would not only connect physical infrastructures, but would also involve integrated market mechanisms to move power more efficiently across the region and optimize the allocation between supply and demand centres. An Asian energy highway would also provide a platform for energy pooling and spot-market pricing. In a competitive environment, a transparent purchasing framework would limit the exposure of deficit countries to distorted pricing and thus help reduce the potential for geopolitical conflict. From the perspective of sustainability, an integrated grid would balance peak loads by using larger transmission grids across different time zones, as well as expand the scope for distributing energy from renewable resources.

2. The need for a strong institutional framework

48. With advances in energy generation and transmission technologies, the Asian energy highway would be technically feasible. However, its

[22] See Commission resolution 68/11 on connectivity for energy security.

success would depend upon institutional and technical harmonization among electricity industries and cooperation among Governments. These challenges could be met through a robust institutional framework for intergovernmental cooperation. To ensure that the benefits are shared, participating countries should also agree on mechanisms to levy user charges on the grid, with the possibility of "ring-fencing" some revenues to finance community development, particularly rural electrification projects.[23]

49. There are also concerns about capacity, as some countries have weak systems for national power generation and management and face chronic power shortages. If existing national power generation and distribution systems are chronically loss-making and have unrealistically low tariffs, there is little prospect for participating in regional schemes.

50. For these reasons, the vision of a regional energy network should be tempered with realism. The pragmatic solution is to consider this not as a regional super-infrastructure proposal but rather as an ongoing and phased process of capacity-building and development. The Asian energy highway may thus be achieved by a twin-track approach of supporting reforms at the national level in conjunction with improvements in subregional and regional power connectivity.

D. People-to-people connectivity

51. With increasing regional connectivity, movements of people across national borders are expected to increase. Furthermore, the region is undergoing a dramatic demographic transition, with some countries ageing so rapidly that their populations are shrinking, while others have a large youth population concentrated in prime employment ages. In this regard, international migration offers an opportunity for the people in the ESCAP region to take advantage of the region's economic growth and enhance their skills, training and knowledge. However, to ensure that such migration is beneficial for all involved, particularly the migrants themselves, it is necessary to consider a broad range of policy options for facilitating and managing the movement of people.

1. Benefits and challenges of international labour migration

52. Increased regional mobility through managed labour migration can lead to shared prosperity in the region through addressing labour market needs, improving skills acquisition and serving as a risk-mitigation strategy for households. In Asia and the Pacific, international migration flows in recent years have predominately been composed of temporary labour migrants. Many countries in the region, such as Thailand, are simultaneously countries of origin, destination and transit for migrants.

53. One of the principal benefits of labour migration for both households and countries of origin is the flow of remittances. In 2013, India, China, the Philippines, Bangladesh, Pakistan and Viet Nam (in that order) were among the world's top 10 remittance-receiving countries in value terms. However, migration can also have negative impacts on sending countries. For example, countries can suffer from a "brain drain", while at the household level, having

[23] For example, the CASA-1000 Project, which is aimed at building a Central Asia-South Asia Regional Electricity Market by exporting power from Kyrgyzstan and Tajikistan to Afghanistan and Pakistan, incorporates benefit-sharing by imposing a surcharge on energy generation to finance development projects identified by local communities along the route of the transmission line.

one or both parents migrate overseas puts many pressures on families and individuals.

54. At the receiving end, destination countries can benefit significantly from labour migration. At various points in time, the high-income countries in the region, such as Australia, Brunei Darussalam, Japan, New Zealand, the Republic of Korea and Singapore, have filled gaps in their labour markets with migrant workers, while middle-income countries, such as Malaysia, Maldives and Thailand, also rely on foreign labour in their construction, manufacturing and other sectors.

55. The rapid growth of labour migration flows in the region has raised the issue of social protection for international migrants, including access to health care and reproductive health services, and income security. Social protection schemes are often limited to the formal sector and the non-migrant population, while workers who are covered by social protection schemes in their countries of origin may lose their entitlements once they take up residence in a new country. One particular challenge to women migrants is the lack of recognition of domestic work as an occupation.

2. Cooperative approaches to managing international flows of labour migrants

56. ESCAP has identified migration as an "emerging opportunity for development", but one which needs to be managed through both national action and multilateral dialogue and cooperation.[24] Given that migration entails both benefits and risks for countries of origin and destination, the responsibility for managing migration lies with both parties. There are currently several examples of bilateral agreements between source and destination countries, but as the region's economies become more integrated, there will be pressure on Governments to develop a geographically broader framework for managing migration.

57. At the same time, there is an urgent need for regional cooperation to establish common standards to protect the rights of migrants, as well as to prevent the trafficking of persons which is increasingly taking place under the guise of consensual migration. At the global level, the principal instrument is the International Convention on Protection of the Rights of All Migrant Workers and Members of Their Families, but to date, the Convention has been ratified only by eight countries in the ESCAP region.[25] Subregional efforts to formalize the rights of migrant workers, such as the ASEAN Socio-Cultural Community Blueprint,[26] are encouraging, while initiatives which support multi-stakeholder dialogue, such as the South Asia Migration Commission established by SAARC member States, should be supported.

3. Strengthening knowledge networks of people and institutions

58. With education becoming more and more globalized, an increasing number of students are seeking tertiary education abroad. In 2012, Australia was the fourth largest host for international students globally, with 6 per cent

[24] *International Migration: An Emerging Opportunity for the Socio-economic Development of the ESCAP Region* (United Nations publication, Sales No. E.02.II.F.40.).

[25] Azerbaijan, Bangladesh, Indonesia, Kyrgyzstan, the Philippines, Sri Lanka, Tajikistan and Turkey. The Convention, which entered into force in 2003, establishes minimum standards that parties should apply to migrant workers and members of their families, irrespective of their migratory status. See General Assembly resolution 45/158.

[26] Available from www.asean.org/archive/5187-19.pdf.

of mobile students, the Russian Federation was sixth with 4 per cent, Japan seventh also with 4 per cent and China ninth with 2 per cent.[27] Moreover, the region is also currently the source of approximately 50 per cent of internationally mobile students, due in part to the growth of students from China.

59. Tertiary education offers significant opportunities for cross-border linkages, knowledge generation and knowledge-sharing. The region has numerous associations and organizations which promote linkages between universities and researchers, including several networks established by ESCAP.[28] New doors for knowledge generation and sharing are also opening up via the Internet: the University of the South Pacific, for example, is widely regarded as a success story for delivering higher education through distance education.

60. These networks can contribute to "knowledge clusters" — networks of individuals in academia and the private sector and Governments — for project planning, joint-research and the exchange of ideas. China, Japan, the Republic of Korea and the Russian Federation are world leaders in terms of expenditure on research and development as a share of GDP, while almost 40 per cent of all researchers in the world are located in Asia and the Pacific.[29] With such a rich resource base, Governments, academic institutes and the private sector can work together to strengthen cross-border collaboration between knowledge clusters.

4. Strengthening business networks and associations

61. Business networks and associations constitute another important type of people-to-people network. While originally a means of bringing together domestic private enterprises, many international networks and associations have been established over the past few decades. Among the best known are the International Chamber of Commerce, the Confederation of Asia-Pacific Chambers of Commerce and Industry, and the SAARC Chamber of Commerce and Industry. Such chambers advocate for and foster private sector development, as well as facilitate trade.

62. In the context of regional connectivity, business associations and networks can help businesses in less developed countries to connect to businesses in other countries. In particular, business associations support the development of small and medium-sized enterprises (SMEs), which account for nearly 50 per cent of all value addition within Asia and the Pacific.[30] As private businesses are often the major drivers, as well as beneficiaries, of better regional connectivity, Governments should expand cooperation with business networks.

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[27] United Nations Educational, Scientific and Cultural Oraganization, *Global Flow of Tertiary-level Students* (2014). Available from www.uis.unesco.org/Education/Pages/international-student-flow-viz.aspx.

[28] Some examples include the Asia-Pacific Research and Training Network on Trade (ARTNeT) and the Network for Knowledge Transfer on Sustainable Agricultural Technologies and Improved Market Linkages in South and Southeast Asia (SATNET Asia).

[29] *Statistical Yearbook for Asia and the Pacific 2013* (United Nations publication, Sales No. E.13.II.F.1.).

[30] *Policy Guidebook for SME Development in Asia and the Pacific* (United Nations publication, Sales No. E.12.II.F.2.).

5. Putting individuals at the heart of people-to-people connectivity

63. The various networks described above require different sets of policy responses, but ultimately they are all linked by the individuals within them. Within people-to-people connectivity, therefore, there are areas of similar or overlapping concern, where ministries should cooperate with each other, as well as with other stakeholders, to discuss and design appropriate policies.

64. With regard to international labour migration, a comprehensive regional framework for managing labour migration should include: protecting the rights of all migrants; more legal channels for labour migration; increased skills-recognition schemes; and further regional norm-setting and cooperation on managing migration. At the same time, regional approaches are not a substitute for structural reforms at the national level, or the ratification of international conventions and instruments to protect the rights of migrants.

65. Meanwhile, Governments should support the efforts of the universities and research institutions in the region to build knowledge networks and promote student exchanges. The future direction of people-to-people connectivity in the ESCAP region will also depend on closer cooperation between international organizations, subregional organizations, business associations and academic networks. In this regard, ICT connectivity, with its potential to link networks of different stakeholders, presents tremendous opportunities for strengthening people-to-people connectivity.

IV. Strengthening institutional coordination and regional cooperation

66. While it can be argued that the private sector has been leading the economic integration of the region, ultimately the main driving force behind regional connectivity is the political will of national Governments. Governments must therefore take the lead in establishing robust institutional frameworks to plan and implement the regional connectivity agenda.

A. Strengthening institutional responses to regional connectivity

67. The complex nature of regional networks requires Governments to develop cross-sectoral policies, both at the national and regional levels. To achieve this, they will need to strengthen institutional mechanisms. The Asia-Pacific region is home to a wide variety of intergovernmental organizations, many of which are already implementing initiatives related to regional connectivity. In particular, ASEAN and APEC have focused on connectivity as part of their regional integration agendas.[31] With the emergence of such initiatives, policy coordination among organizations has become an urgent challenge. In this regard, regional institutions such as ESCAP have an important role to play as a link between subregional, national and global initiatives.

68. Planning and implementing regional connectivity strategies also requires two additional components: the availability of comparable, accurate and timely information and data; and finance. Both of these critical issues can be addressed through regional cooperation.

[31] The Master Plan on ASEAN Connectivity, for example, is one of the first comprehensive intergovernmental strategy documents to focus on connectivity.

B. Statistical standards for strengthened accountability and better policymaking

69. Official statistics enable Governments to develop a shared understanding of trends, issues and bottlenecks, which is fundamental for building consensus on cross-border issues, such as trade, labour mobility, immigration, transport and tourism. In order to be comparable across countries, over time and across different data sources, however, statistics must adhere to internationally agreed standards, such as the System of National Accounts, or those agreed at regional or subregional levels.

70. To move forward the regional connectivity agenda, national Governments are strongly encouraged to adopt global statistical standards and build their capacities for collecting and disseminating official statistics. They should also work more closely together through established forums, such as the United Nations Statistical Commission and the ESCAP Committee on Statistics, to define the type of statistics needed and to identify new and innovative sources for such data.

C. Regional solutions for financing regional infrastructure networks

71. Infrastructure development invariably involves high capital costs, with benefits accruing over the longer run. The pace of infrastructure development is therefore progressing unevenly across the region and tends to be directed towards satisfying domestic needs. Yet the benefits of regional infrastructure networks extend over and beyond national borders, pointing to the need to reconsider the networks as a type of "regional public good". Such approaches can target the "weakest links" of these networks, while at the same time enhancing the connectivity of the disadvantaged countries.

72. Countries should explore regional mechanisms to finance infrastructure development. Already there are examples of regional infrastructure funds, such as the ASEAN Infrastructure Fund, while plans for other multi-donor funds are under way. Negotiations on a "BRICS" development bank, proposed in 2012 by the so-called BRICS countries, namely Brazil, the Russian Federation, India, China and South Africa, are also expected to be finalized in 2014. To complement the efforts of such funds, a regional project preparatory facility could be established to help countries to prepare bankable regional projects.

73. Another regional mechanism is an Asian multi-donor platform, which would collect grants from different donors and allocate them to national or multilateral development banks. The objective would be to use concessional resources to leverage more public and private funding for regional projects, which could help increase the financial viability of such projects or reduce the risks.

74. Finally, there is scope for greater private involvement in financing infrastructure projects, such as through public-private partnerships (PPPs). However, many countries in the region still lack appropriate PPP policy frameworks. ESCAP is currently working with some Governments to develop such frameworks and promote knowledge-sharing among them so that they can learn from each other's experiences.

V. Conclusions and recommendations

75. In this year's theme study, it was found that regional connectivity is inherently multifaceted, and that the benefits of this connectivity may be enhanced by combining different elements. The main conclusions and recommendations of the study are highlighted below.

76. **Institutional coordination is key to strengthening regional connectivity.** As networks are likely to become more integrated and interdependent as they evolve, Governments have to develop cross-sectoral policies on connectivity, at national, subregional and regional levels. This will require greater and more effective institutional coordination. To achieve this, they should make greater use of existing intergovernmental forums, such as the annual sessions of the Commission and the regular meetings of its legislative Committees. One area in particular where institutional coordination is needed is in the adoption and development of global and regional standards, on both technical and procedural issues.

77. **Development of regional networks as "regional public goods".** Countries in the Asia-Pacific region have the opportunity to develop their infrastructure networks in a coordinated and integrated manner. In particular, countries should explore the synergies which can be accrued from the "co-habitation" of infrastructure networks, particularly the laying of fibre-optic cables along roads, railways and electricity distribution networks. However, such an approach requires cross-country consensus, with a clear understanding of the distribution of costs and benefits of improving connectivity. Governments therefore need to further discuss and refine the regional strategies outlined in the present study. In particular, the concept of regional public goods should be further explored as the basis for developing regional financing mechanisms.

78. **Enhancing regional connectivity for disadvantaged countries.** The aim of enhanced regional connectivity should be to create new opportunities for all, especially the least developed countries, the landlocked developing countries and the small island developing States. These countries may wish to use their current endowments to develop industries which are likely to grow in the future. Greater ICT connectivity could help them develop commercial services, such as transport, telecommunications and financing. Meanwhile, all countries in the region can support the disadvantaged countries by enhancing people-to-people connectivity — for example, by encouraging more interactions between students and workers.

79. **Developing networks of people and knowledge.** A country's greatest asset is its people. Governments can expand the potential of their citizens by promoting greater mobility for both skilled and unskilled workers. There would be enormous benefits from developing more coordinated approaches to manage international labour migration in the region. Both source and destination countries should gain, while at the same time protecting migrants and their families from potential negative effects and reducing the risk of trafficking. People's potential can also be developed through academic, civil society and other knowledge networks. Governments could support the development of such networks, for example by encouraging their students and academics to study and work in other countries. Furthermore, they should work closely with the private sector and its representatives to support business network development.

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80. **Next steps towards regional connectivity.** As globalization continues, the region's future will depend on how countries work together. The regional strategies discussed in this study can serve as a catalyst for regional connectivity. Ultimately, however, national Governments must take the lead in forging regional connectivity, both by making the necessary changes in their national policies, as well as by actively participating in regional initiatives on connectivity.

81. ESCAP can support their efforts by providing a neutral platform for frank and informed discussions among relevant stakeholders. In this regard, the multisectoral expert groups, which are being established in accordance with the 2013 Bangkok Declaration on Regional Economic Cooperation and Integration in Asia and the Pacific, can help Governments to identify the best approaches for implementing these regional strategies.